Small Business Innovation Research/Small Business Tech Transfer

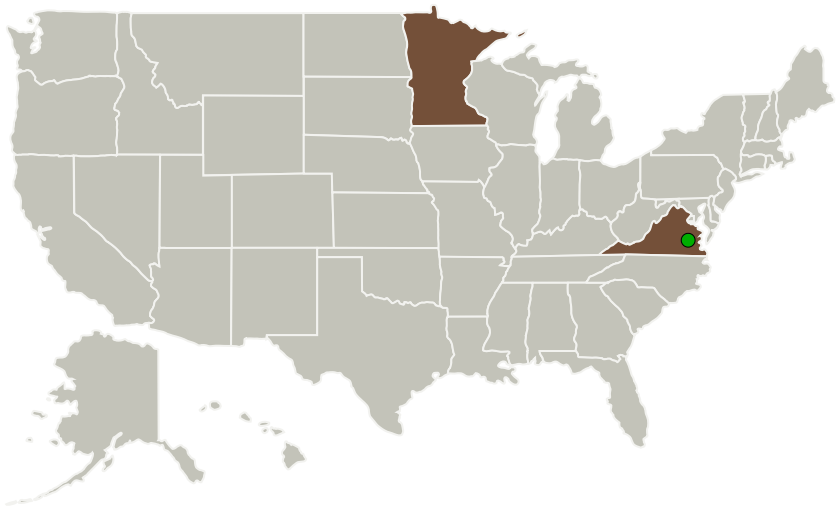
Integrated Multi-Mode Automation for Trajectory Based Operations, Phase II

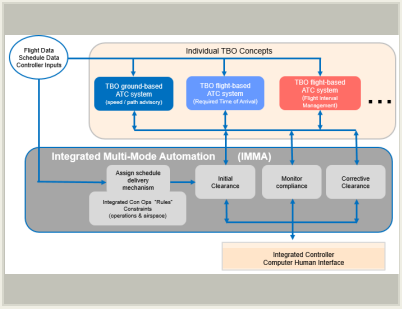
Completed Technology Project (2017 - 2019)

Project Introduction

Air Traffic Management's lack of support for aircraft with different capabilities is a long standing and persistent issue that can limit the ability of the National Airspace System (NAS) to take full advantage of advanced aircraft capabilities. To fully utilize the variety of Trajectory Based Operations (TBO) concepts planned for the NAS, some of which utilize advanced aircraft capabilities for implementing trajectories, an air traffic controller (ATC) must be able to simultaneously support a variety of TBO concepts using different aircraft automation systems to fly the desired trajectory. To accomplish this, the ATC needs automation support to simplify the inherent complexities of using a variety of different BO concepts and trajectory implementation strategies and provide the controller with the tools needed to execute the desired trajectories, maintain situational awareness at all times, and support off-nominal situations. IMMA (Integrated Multi-Mode Automation) provides the automation to simplify the inherent complexities of using multiple TBO concepts by focusing the controller interactions on common core functions (e.g., the initial clearance, compliance monitoring) that all TBO concepts must support.

Primary U.S. Work Locations and Key Partners





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Completed Technology Project (2017 - 2019)

Organizations Performing Work	Role	Type	Location
Architecture Technology Corporation	Lead Organization	Industry	Eden Prairie, Minnesota
Langley Research Center(LaRC)	Supporting Organization	NASA Center	Hampton, Virginia

Primary U.S. Work Locations	
Minnesota	Virginia

Project Transitions

April 2017: Project Start

April 2019: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140956)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Architecture Technology Corporation

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

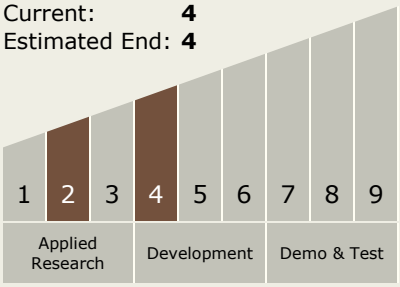
Carlos Torrez

Principal Investigator:

Douglas Sweet

Technology Maturity (TRL)

Start: **2**
Current: **4**
Estimated End: **4**



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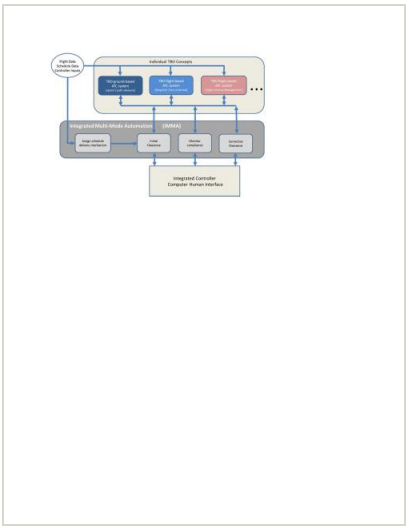
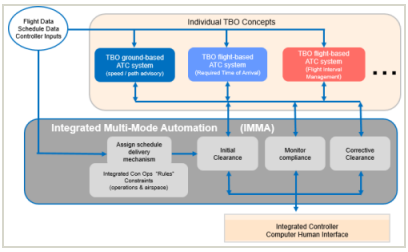
Images



Briefing Chart Image
Integrated Multi-Mode Automation for Trajectory Based Operations, Phase II Briefing Chart Image
(https://techport.nasa.gov/image/126708)



Final Summary Chart Image
Integrated Multi-Mode Automation for Trajectory Based Operations, Phase II
(https://techport.nasa.gov/image/135796)

Technology Areas

Primary:

- TX16 Air Traffic Management and Range Tracking Systems
  - TX16.3 Traffic Management Concepts

Target Destinations

The Moon, Mars, Outside the Solar System, The Sun, Earth, Others Inside the Solar System